



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,507	01/30/2004	Gerhard Maier	GP-303288	6878

7590 08/17/2007
CARY W. BROOKS
General Motors Corporation
Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER

FIGUEROA, JOHN J

ART UNIT	PAPER NUMBER
----------	--------------

1712

MAIL DATE	DELIVERY MODE
-----------	---------------

08/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/768,507

Applicant(s)

MAIER ET AL.

Examiner

John J. Figueroa

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6-16 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-16 and 22-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The 35 U.S.C. 102(b) rejection of claims 1-9, 11 and 12 as anticipated by WO 2001/19896 to Wilson et al. (hereinafter 'Wilson'), previously made of record in item 3 on page 2 of the Office Action of November 15, 2006 (hereinafter 'OA'), has been withdrawn in view of the amendment to the claims in Applicant's response to OA of February 14, 2007 (hereinafter 'Response').
2. The 35 U.S.C. 103(a) rejection of claims 10 and 11 as unpatentable over Wilson, previously made of record in item 5 on page 4 of OA, has been withdrawn in view of Applicant's amendment to the claims in Response.

Election/Restrictions

3. Upon Applicant's extensive amendment to the claims in Response, an election of species requirement was mailed May 10, 2007. Applicant timely filed a reply on June 4, 2007 and has elected the species with the following substituents: Y=SO₂, Z=halogen, X=SO₂ and G=halogen. Claims 1, 2, 6-16 and 22-27 have been examined as to the species having the elected substituents. Because all the pending claims encompass species with the elected substituents, all claims have been examined and no claim has been withdrawn from further consideration at this time.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 6-16 and 22-27 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2002/0091225 A1 to McGrath et al., hereinafter 'McGrath':

Applicant has elected for examination the block copolymers having the following substituents for the chemical formula recited in claims 1, 6, 7 13, 14, 15, 16 and 22-27: Y=SO₂, Z=halogen, X=SO₂ and G=halogen.

McGrath discloses ion-conducting sulfonated polymeric materials formed from direct polymerization of sulfonated monomers that are used to form membranes for applications in fuel cell and ion-exchange technology, such as polymer electrolyte fuel cells. (Abstract; page 1, [0003], [0004] and [0009] to [0012]; page 2, [0014] to [0019]; page 4, [0037]; Example 1; See, e.g., chemical structures on page 2, wherein Y and/or Z can be SO₂ and wherein Y and Z need not be the same) McGrath expressly discloses examples of proton exchange membranes comprising the sulfonated polymers and a method of making thereof. (Page 2, [0020] to page 3, [0027]; Example 3; See, chemical structures on page 3)

McGrath also discloses that the sulfonated aromatic monomers used to form the sulfonated polymers can include halogens, such as fluorine, chlorine and bromine (page

Art Unit: 1712

4, [0043] to page 5, [0046]) and a particular activated sulfonated monomer used to form the polymer is "SDCDPS" depicted in scheme 3 on page 5 which is equivalent to the chemical formula of the instant application wherein Y and/or Z is SO_2 ; G=Z are both chlorine; and Q is a sulfonated group $\text{SO}_3\text{-Na}^+$. (Page 5, [0049]; See, schemes 2 and 4 on pages 6 and 8, respectively; Example 3)

Examiner notes that Scheme 2 provides a polymer having a segment with an acidic substituent and a segment without substituents. The terminal monomers of these polymer chains can contain halogen.

McGrath further discloses that the term "polymer" as used in the specification includes "block copolymers". (Page 4, [0040])

Regarding the morphology recited in claim 10, McGrath discloses a microphase separation of the matrix polymer that provides the template for the nanocomposite membrane. (Page 11, [0085])

McGrath discloses molar ratios of 0.001 to 0.999 for various monomer components of the disclosed block copolymer. (Page 3, [0026]) Although McGrath does not expressly disclose the molar mass of a segment of the disclosed block polymer to be between *500 and 500,000 g/mol* (a very large range recited in claim 1) because McGrath and the instant claims encompass the ion-conductive membrane, then both membranes must inherently possess similar physical properties, such as molar mass.

Thus, the instant claims are anticipated by McGrath.

Response to Arguments

The 35 U.S.C. 102 and 103 Rejections over Wilson (items 3 and 5 of OA)

6. Applicant's arguments with respect to the captioned prior art rejections over Wilson have been considered but have become moot due to the withdrawal of these rejections in view of Applicant's amendment in Response requiring the new grounds of rejection presented *supra* in this Action.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure but deemed cumulative. Examiner notes that the last reference cited is a Chemical Review article that may not be prior art *per se* but instead reviews various articles relevant to the instant claimed invention that actually are prior art. (See, e.g., pages 4595-97 of said review article)

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 1712

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

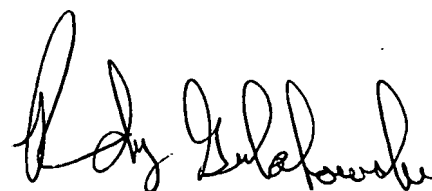
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Figueroa whose telephone number is (571) 272-8916. The examiner can normally be reached on Mon-Thurs 8:00-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJF/RAG

Art Unit: 1712

A handwritten signature in black ink, appearing to read "Randy Gulakowski". The signature is fluid and cursive, with the first name "Randy" and last name "Gulakowski" clearly distinguishable.

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700